ABSTRACT OF THE DISCLOSURE

The present invention allows for processing classification and/or security filtering rules by using bitmaps as representations. In one instance, the packet header involved in the packet classification is divided into sections (fields) such as 16 bit portions. Once, this is performed, a data lookup table is built for each of the packet header fields. In particular, a bitmap is created representing which filter rules match a certain packet header field value. The created data lookup tables, typically one for each packet header field, are merged to form intermediate level data lookup tables. The intermediate level data lookup tables are continuously merged until one final data lookup table is formed. The result of the final data lookup table represents all the possible packets to be classified. Thus, each final data entry has a bitmap representing the filtering rules that matches this entry. The bitmap can be used to selectively provide a desired result of the classification. For instance, a first matching rule is represented by the first bit set in the bitmap; the best matching rule is determined by processing the bitmap and selecting the most appropriate rule; and a complete set of rules that match is represented by the full bits set in the bitmap.